



ORNITHORHYNCHUS ANATINUS.

*Moulton and M. Richter, del. et lith.*

*Reproduction of the original, from*



# ORNITHORHYNCHUS ANATINUS.

## Ornithorhynchus.

- Platypus Anatinus*, Shaw, Nat. Misc., vol. x. pl. 385.—Ib. Gen. Zool., vol. i. part i. p. 229. pls. 66 & 67.—Gray, List of Mamm. in Coll. Brit. Mus., p. 191.
- Ornithorhynchus paradoxus*, Blumenbach in Voigt's Magaz., tom. ii. p. 305. pl. 41.—Home in Phil. Trans. 1800, p. 432, and 1802, p. 67.—Cuv. Règn. Anim. Edit. 1829, tom. i. p. 235.—Meckel, Ornith. paradoxi desc. anatom., Lips. 1826, fol.—Owen in Trans. Zool. Soc., vol. i. p. 221.—Bennett in Trans. Zool. Soc., vol. i. p. 229.
- *fuscus* et *rufus*, Peron, Voy. de Découv., tom. i. pl. 34. figs. 1 & 2.—Leach, Zool. Misc., vol. ii. p. 136. pl. 3.—Desm. Mamm., part ii. p. 380.
- *brevirostris*, Ogilby in Proc. of Comm. of Sci. and Corr. of Zool. Soc., part i. p. 150.
- *crispus* et *lævis*, MacGill. in Mem. of the Wernerian Soc. 1832, p. 127.
- *Anatinus*, Waterh. Nat. Hist. of Mamm., vol. i. p. 25.
- 

ON commencing a history of the *Ornithorhynchus*, the mind naturally reverts to the period of its first discovery; a period so recent, that the animal was unknown to Linnæus and the older authors. It was in 1799 that a description of this singular quadruped first appeared in the "Naturalists' Miscellany" of Dr. Shaw; about this time also, the *Koala*, *Wombat*, *Kangaroo*, *Emu*, *Menura*, *Cereopsis*, and *Black Swan* were made known. These important discoveries gave an extraordinary impulse to the study of natural history, and set the whole scientific community wondering at the paradoxical creations of the distant country known by the name of Australia. Unquestionably the most singular and anomalous of all these animals was the *Ornithorhynchus*, with the habits and economy of which, as well as the mode of its reproduction, we are even now, after an interval of fifty-five years, but imperfectly acquainted. It is true that Professor Owen has given an elaborate paper on its anatomy and physiology in the "Transactions of the Zoological Society of London," and that the same work contains Mr. Bennett's interesting account of his observations of the animal in a state of nature and in captivity; still I am persuaded that much more remains to be ascertained and made known respecting this extraordinary type among quadrupeds. Although the ornithology of Australia almost exclusively engrossed my attention during my interesting visit to that country, I did not fail to notice the mammals which crossed my path and by which I was always surrounded. The *Ornithorhynchus* especially attracted my attention, as I frequently met with it both while ascending the rivers in Van Diemen's Land and while encamped beside the quiet pools of New South Wales. I endeavoured to determine the centre of its area and to trace the extent of its range, but was not entirely successful, nor have they yet been accurately ascertained: Van Diemen's Land, and the south-eastern part of the continent from Moreton Bay to Port Philip, are the only portions of that great country whence I have received specimens, or where I have heard of it existing. In New South Wales it is common in the streams and rivers flowing from the mountain ranges to the sea, as well as in those descending towards the interior. It is equally numerous in all the tributaries which feed the great rivers Darling and Murray; and if it be not now plentiful in the Hawkesbury, Hunter, &c., the diminution in its numbers is solely due to the wholesale destruction dealt out to it by the settlers, which, if not restrained, will ere long lead to the utter extirpation of this harmless and inoffensive animal, a circumstance which would be much to be regretted; it is in fact often killed from mere wantonness, or at most for no more useful purpose than to make slippers of its skin. Some zoologists have entertained the opinion that there are more than one species of this form, and that the animal inhabiting Van Diemen's Land, with stiff wiry hairs, particularly on the tail, where they, moreover, nearly cross each other at right angles, is specifically different from that found on the continent, which is generally of a smaller size, and of which the hairy covering is more sleek and glossy; I believe, however, that no tangible specific differences will be found, and that the variations in question are due to localization alone; much variety is also found in the colouring of the under surface, but as this occurs both in island and continental specimens, it cannot be regarded as a matter of importance.

In many of its habits and actions, and in much of its economy, the *Ornithorhynchus* assimilates very closely to the Common Water Vole of this country (*Arvicola amphibius*, Desm.); frequenting as it does similar situations, climbing stumps of trees and snags which lie prostrate in the beds of rivers, and burrowing in the bank side in an upward direction, a retreat to which it resorts during the day or on the approach of danger. If it be not strictly nocturnal, it is in the early morning and evening and in lowery weather only that it is to be seen during the daytime. It swims with great ease, and frequents alike the rushy banks of the great rivers near the sea, and the silent, tranquil pools of the interior. Its mode of swimming is very singular and not always alike; sometimes the body of the animal, beaver-like, is partly raised above the surface, while at others, particularly in the still pools, every part is submerged except the upper surface of the bill and nostrils, and these being but sufficiently elevated above the water to enable the animal to breathe,



it is only by the little rings which this operation creates upon the glassy surface that its presence can be detected. I have frequently come suddenly upon it while ascending the reedy sides of the Derwent in a boat, when it instantly dived, with an audible splash, caused apparently by the hasty flap of its broad tail. I could say much more respecting the habits of this curious quadruped. In the volume of the "Transactions of the Zoological Society" above referred to, Mr. Bennett states that:—

"The *Ornithorhynchus* is known to the colonists by the name of *Water-Mole*, from some resemblance which it is supposed to bear to the common European Mole, *Talpa Europæa*, Linn.: by the native tribes at Bathurst and Goulburn Plains, and in the Yas, Murrumbidgee, and Tumat countries, I found it designated by the name of *Mullangong* or *Tambrete*; but the latter is more in use among them than the former. It is very abundant in the river Yas, particularly in the tranquil parts of the stream called 'ponds,' the surface of which is covered with various aquatic plants. On perceiving it, the spectator must remain perfectly stationary, as the slightest noise or movement would cause its instant disappearance, so acute is it in sight or hearing, or perhaps both; and it seldom reappears when it has been frightened. By remaining perfectly quiet when the animal is 'up,' the spectator is enabled to obtain an excellent view of its movements; it seldom, however, remains longer than one or two minutes, playing and paddling on the surface, soon diving again and reappearing a short distance above or below, generally according to the direction in which it dives, which it does head foremost.

"The various contradictory accounts that have been given, on the authority of the aborigines, as to the animal laying eggs and hatching them, induced me to take some pains to find out the cause of error, and being perfectly satisfied, from an internal examination of a female, that *ova* were produced in the *uteri*, I could the more readily determine the accuracy or inaccuracy of the accounts which I might receive from the natives.

"The Yas natives at first asserted that the animal lays eggs, but shortly afterwards contradicted themselves. In the Tumat country the answers were readily and satisfactorily given—"No egg tumble down; pickaniunny make tumble down"—which accorded with my own observations.

"On the 7th of October, I accompanied an aborigine, called Daraga, to the banks of the Yas, to see the burrow of an *Ornithorhynchus*, from which, he told me, the young had been taken last summer. I asked him, 'What for you dig up *Mullangong*?' 'Murry budgerec patta' (Very good to eat), was his reply. On arriving at the spot, situated on a steep bank close to the river, about which long grass and various other herbaceous plants abounded, my guide, putting aside the long grass, displayed the entrance to the burrow, distant rather more than a foot from the water's edge. In digging up this retreat the natives had not laid it entirely open, but had delved holes at certain distances, and introduced a stick to ascertain its direction previously to again digging down upon it. By this method they were enabled to explore the whole extent with less labour than by laying it open from end to end. The termination of the burrow was broader than any other part, nearly oval in form, and strewn at the bottom with dry river weeds, &c., a quantity of which still remained. The whole of the interior was smooth, extending about twenty feet in a serpentine direction up the bank. It had one entrance near the water's edge, and another under the water, communicating with the interior by an opening just within the upper entrance. It is no doubt by the latter that the animal seeks refuge when it is seen to dive and not to rise again to the surface.

"On examining the cheek-pouches or the stomachs of these animals, I always observed the food to consist of river insects, very small shell-fish, &c., comminuted and mingled with mud or gravel: this latter might be required to aid digestion, as I never observed the food unmingled with it. The natives say that they also feed on river weeds; but I never found remains of that description of food in their pouches. Mr. George MacLeay informed me that he had shot some, in a part of the Wollondilly River, having river weeds in their pouches; but he observed that in that part of the river aquatic insects were very scarce. The young are suckled at first, and afterwards fed with insects, &c., mingled with mud.

"Having captured one alive, I placed it in a cask, with grass, mud, water, and everything necessary to make it comfortable. It ran round its place of confinement, scratching and making great efforts to get out; but finding them useless, became quite tranquil, contracted itself into a small compass, and soon fell asleep. At night it became very restless, and diligently sought to escape, going round the cask with the fore paws raised against the sides and the webs thrown back, and scratching violently with the claws of the fore feet, as if to burrow its way out. In the morning I found it fast asleep, with the tail turned inwards, the head and beak under the breast, and the body contracted into a very small compass; subsequently, however, I observed it sleeping with the tail turned inwards, the body contracted, and the beak protruded. When disturbed from its sleep, it uttered a noise something like the growl of a puppy, but in a softer and more harmonious key. Although quiet for the greater part of the day, it constantly made efforts to escape, and uttered a growling noise during the night."

Shortly after this, Mr. Bennett started for Sydney, taking with him his interesting captive. "*En route*," he availed himself of the vicinity of some ponds, inhabited by these animals, to give it a little recreation; "and accordingly tied a long cord to its leg and roused it from its sleep; when placed on the bank it soon found its way to the water, and travelled up the stream, apparently delighting in those places which most abounded with aquatic weeds. Although it dived in deep water, it appeared to prefer keeping close



to the bank, occasionally thrusting its beak (with a motion similar to that of a *Duck* when it feeds) among the mud, and at the roots of the weeds lining the margin of the ponds, which we may readily suppose to be the resort of insects. After it had wandered some distance, it crawled up the bank, and lying down on the grass, enjoyed the luxury of scratching itself and rolling about. In this process of cleaning itself, the hind claws were alone brought into use; first the claws of one hind leg, then those of the other. The body being so capable of contraction was readily brought within reach of the hind feet, and the head also was brought so close as to have its share in the cleaning process. The animal remained for upwards of an hour thus engaged, after which it had a more sleek and glossy appearance. It permitted me to smooth it gently over the back, but disliked being handled.

"On the 28th of December I visited a very beautiful part of the Wollondilly River, which has the native name of Koroa, and explored a burrow, the termination of which was thirty-five feet from the entrance. Extensive as this may appear, burrows have been found of even fifty feet in length. On arriving at the termination a growling was distinctly heard, which upon further search was found to proceed from two full-furred young ones, a male and a female, coiled up asleep, and which growled exceedingly at being exposed to the light of day. They measured ten inches from the extremity of the beak to that of the tail; had a most beautifully sleek and delicate appearance, and seemed never to have left the burrow. When awakened and placed on the ground, they moved about, but did not make such wild attempts to escape as the old ones do when caught. Shortly afterwards a female was captured, which was no doubt the mother; she was in a ragged and wretchedly poor condition; her fur was rubbed in several places and she seemed in a very weak state. The eyes of the natives glistened and their mouths watered when they saw the fine condition of the young *mullangongs*, and they frequently and earnestly exclaimed, 'Cobbong fat' (large, or very fat), and 'Murry budgereee patta' (very good to eat). They said they were more than eight moons old; if so, they must have been the young of the previous season.

"The young animals sleep in various postures; sometimes in an extended position, and often rolled up like a hedgehog. One lies curled up like a dog, keeping its beak warm with the flattened tail brought over it; while another lies stretched on its back, the head resting by way of pillow upon the body of the old one, lying on its side, the delicate beak and smooth clean fur of the young contrasting with the rough and dirtier appearance of the mother. The favourite posture appears to be that of lying rolled up like a ball: this is effected by the fore paws being placed under the beak, with the head and mandibles bent down towards the tail, the hind paws crossed over the mandibles, and the tail turned up, thus completing the rotundity of the figure.

"Although furnished with a good thick coat of fur, they seemed particular about being kept warm. They would allow me to smooth the fur, but if their mandibles were touched they darted away immediately, those parts appearing to be remarkably sensitive. I could permit the young to run about as they pleased, but the old one was so restless, and damaged the walls of the room so much by attempts at burrowing, that I was obliged to keep her close prisoner. The little animals appeared often to dream of swimming, as I have frequently seen their fore paws in movement as if in that act. If placed on the ground in the daytime, they sought some dark corner for repose; but when put in a dark corner or in a box, they huddled themselves up as soon as they became reconciled to the place, and went to sleep. They would sleep on a table, sofa, or indeed in any place; but, if permitted, would always resort to that to which they had been accustomed. Still, although for days together they would sleep in the place made up for them, yet on a sudden they would repose behind a box or in some dark corner in preference.

"When running they are exceedingly animated, their little eyes glisten, and the orifices of the ears contract and dilate with rapidity; if then taken into the hands for examination, they struggle violently to escape, and their loose integuments render it difficult to retain them. Their eyes being placed high in the head, they do not see objects well in a straight line, and consequently run against everything in their perambulations, spreading confusion among all light and readily overturnable articles. Occasionally they elevate the head, as if to observe objects above or around them. Sometimes I have been able to enter into play with them by scratching and tickling them with my finger; they seemed to enjoy it exceedingly, opening their mandibles, biting playfully at the finger, and moving about like puppies indulged with similar treatment. Besides combing their fur to clean or dry it when wet, I have also seen them peck it with the beak, as a *Duck* would clean its feathers, by both which processes their coats acquire a clean and glossy appearance.

"I was often surprised to find them on the summit of a book-case or some other elevated piece of furniture, and equally at a loss to imagine how they came there, until I at length discovered that it was effected by the animal placing its back against the wall and its feet against the book-case, and by means of the strong cutaneous muscles of the back and the claws of the feet, contriving to reach the top very expeditiously."

The number of young produced at one time has not been satisfactorily ascertained; it has been stated that they are from two to four in number, but I believe that they rarely exceed two. When first born they are naked, and the beak does not resemble that of the adult, but is short, broad and thick, and fitted to embrace the mammary areola concealed by the hairs of the mother; "the tongue too," says Professor Owen, "which in the adult is lodged far back in the mouth, advances in the young animal close to the



end of the lower mandibles; and its disproportionate breadth is plainly indicative of the importance of the organ to the young animal, both in receiving and swallowing its food; the thin fold of integument also, which surrounds the base of the mandibles, and extends the angle of the mouth from the base of the lower jaw to equal the breadth of the base of the upper one, must increase the facility for receiving the milk ejected from the mammary areola of the mother." "While sucking," says M. Verreaux, "the young continually rub or triturate the mother's belly with the fore feet, and occasionally with the hinder ones. At the end of fifteen to twenty days the new born are covered with a silky hair, and are able to swim." M. Verreaux also describes another mode by which the young obtain the lacteal fluid:—"Having a considerable number of adults and young at my disposition, I saw the latter accompany their mothers, with which they played, especially when they were too far from the bank to take their nourishment. I observed that when they wished to procure it, they profited by the moment when the mother was amongst the aquatic plants near the land, where there is no current. The female having her back exposed, by the exercise of a strong pressure the milk floats to a little distance, and the young may suck it up with facility; and thus they do, turning about so as to lose as little as possible. I cannot, perhaps, better compare the appearance of the greasy milk, under these circumstances, than to the iridescent colours produced by the solar rays upon stagnant water. I have witnessed this fact repeatedly, both daily and nightly. I have also remarked that the young, when fatigued, climbed upon the back of the mother, who brought it to land, where it caressed her.

"The body of this singular animal is covered with a fine, long and thick hair, underneath which is a finer, short, very soft fur, resembling the two distinct kinds of fur found in the *Seal* and *Otter*; on the abdomen, breast and throat, the fur and hair are of a much finer quality and of a more silky nature than on the other parts of the body; while on the upper surface of the tail the hair is longer and coarser. The general colour of the upper surface is a light black; the under short fur is greyish; the whole of the under surface is ferruginous; immediately below the inner angle of the eye is a small spot of a light or pale yellow; the legs are short, pentadactyle and webbed; on the fore feet (which seem to have the greatest muscular power, and are in principal use for burrowing and swimming) the webs extend a short distance beyond the claws, are loose, and fall back when the animal burrows; the claws are strong, blunt, and well adapted for burrowing; the hind feet are short, narrow, turned backwards, and when the animal is at rest, have, like those of the *Seal*, some resemblance to a fin; their action is backwards and outwards; the nails are all curved backwards, and are longer and sharper than those of the fore feet; the web does not extend further than the base of the claws. The head is rather flat, from which project two flat lips or mandibles, resembling the beak of a *Shoveller Duck*, the lower of which is shorter and narrower than the upper, and has its internal edges channeled with numerous *striæ*, resembling in some degree those seen in the bill of a *Duck*. The colour of the superior mandible is of a dull dirty greyish-black, covered with innumerable minute dots; the under part of the upper mandible is of a pale pink or flesh-colour, as is the internal or upper surface of the lower mandible, the under surface of which is either perfectly white or mottled,—in young specimens usually the former, in old ones the latter; at the base of both mandibles is a transverse loose fold or flap of integument, always similar in colour to the skin covering the mandibles, that is, dull greyish-black above, and white or mottled below. In the upper mandible this is continued to the eyes, and may perhaps afford protection to those organs when the animal is burrowing or seeking food in the mud; the upper fold or flap is continuous with another portion arising from the lower mandible also at its base; the eyes are very small, but brilliant, and of a light brown.

"In young specimens, the under surface of the tail, as well as the hind and fore legs near the feet, are covered by fine hair of a beautiful silvery-white appearance; this is lost, however, in the adult, in which the under surface of the tail is almost entirely destitute of hair. Whether this proceeds from its trailing along the ground, I know not; but the prevailing opinion among the colonists, for which, however, I could not discover any foundation, is that it is occasioned by the animal using the tail as a trowel in the construction of its dwelling.

"The only external difference in the sexes is the presence in the male of a spur, situated on the internal part of the leg, some distance above the claws; this spur, which is moveable and turned backwards and inwards, was considered to be poisonous, but some experiments" (instituted by Mr. Bennett) "prove that it is innocuous: it is entirely wanting in the females.

"The size of the *Ornithorhynchus* varies, but the males are usually found to be slightly larger than the opposite sex; the average length is from 18 to 20 inches."

In conclusion, I must not omit to call attention to the very valuable details respecting the anatomy of this animal, given by Professor Owen and Mr. Bennett, in the "Transactions of the Zoological Society" above referred to. There will also be found in the "Revue Zoologique" for 1848 some very interesting particulars respecting the reproduction and other points in the economy of this animal, by M. Jules Verreaux, acquired by personal observation in Van Diemen's Land. Professor Owen's remarks on M. Verreaux's observations, published in the "Annals and Magazine of Natural History" for 1848, may also be consulted with advantage.

The Plate represents the two sexes about three-fourths of the natural size.